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(71) Applicant

Eric Wood,

The Board Inn, 62 High

Street, Old Town,

Bridlington, YO16 4QA

(72) Inventor

Eric Wood

(74) Agent and/or Address for Service

William Jones,

Old Bank of England

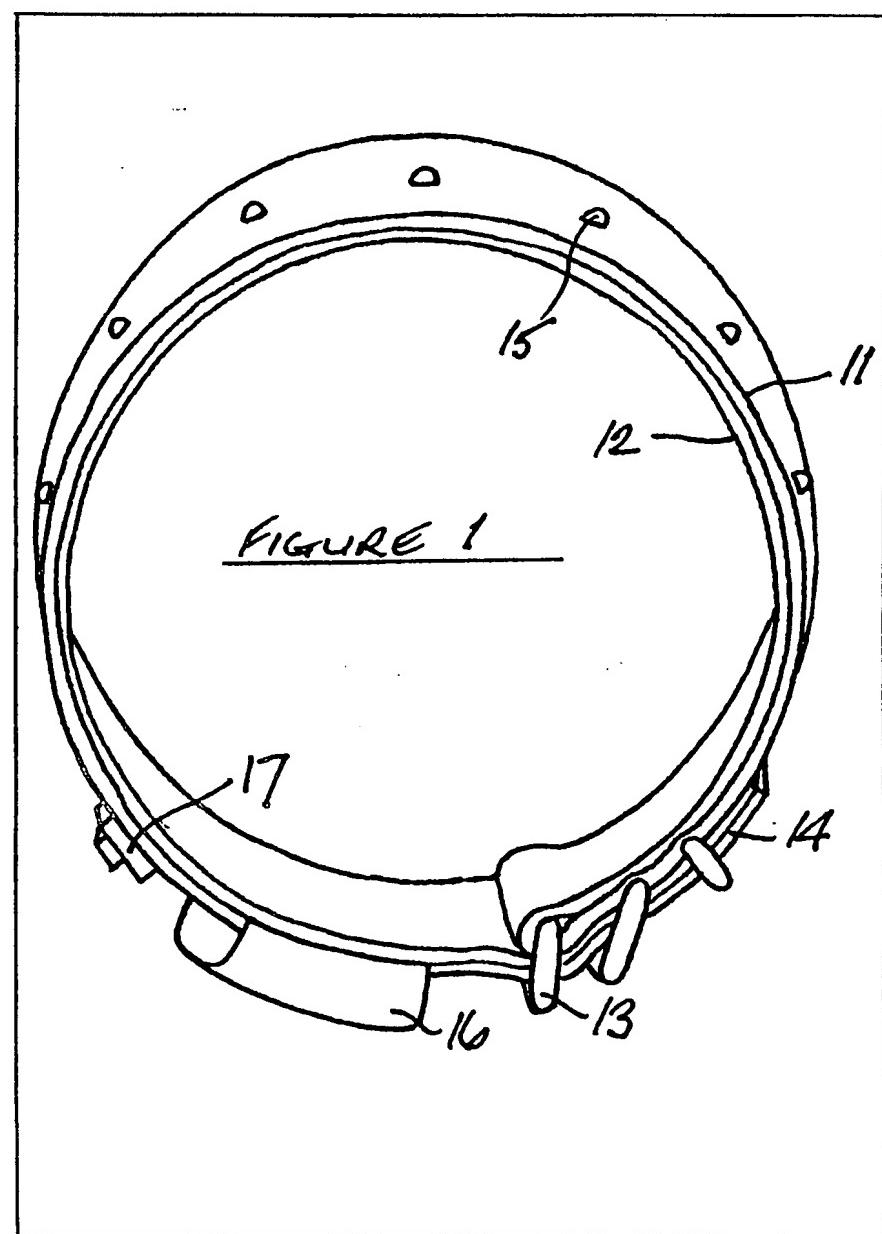
Court, Queen Street,

Norwich Norfolk NR2 4SX

(54) Electrically illuminated harness

(57) An electrically illuminated harness is characterised in that it has a succession of light-emitting diodes built into its outward-facing surface, and

incorporates a pouch to house the diodes' power source; and the necessary electrical leads from the power source to the diodes are housed within the harness and can flex, in use, with the harness.



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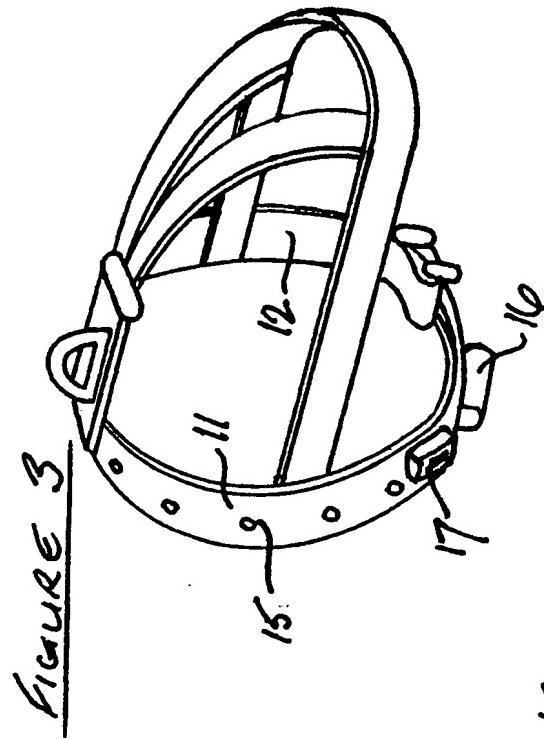


FIGURE 3

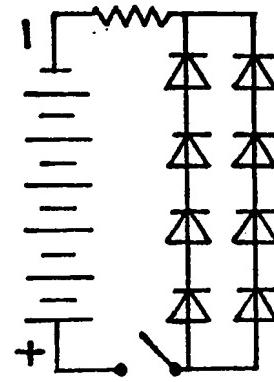


FIGURE 2

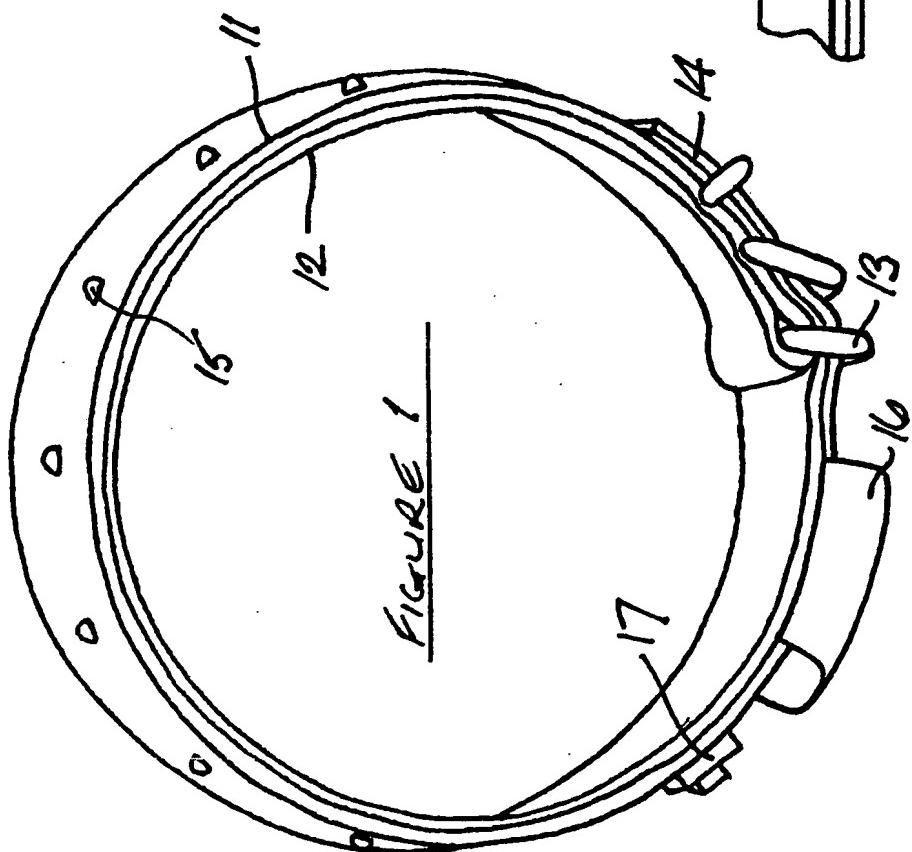


FIGURE 1

**SPECIFICATION****Electrically illuminated harness**

The invention relates to an electrically illuminated harness.

- 5 Conventional means of electrical illumination generally comprise a filament bulb connected by the necessary electrical leads to a power source, for example a dry battery. Filament bulbs are relatively easily damaged, and the batteries  
 10 needed to power them can be fairly heavy if the bulbs are to give out a light of reasonable intensity. For these reasons and others, the idea of an electrically illuminated harness has not received widespread attention in the past.  
 15 The invention seeks to apply more modern technology to this idea, and is based on the realisation that the relative robustness, light weight, and light-intensity of a modern light emitting diode makes these diodes the ideal  
 20 candidates for incorporation into a light-emitting harness.

Such a harness would be especially valuable at night, when conventional harnesses are of no use in identifying the harness wearer from any  
 25 appreciable distance. An electrically-illuminated harness in the form of, for example, a dog collar or an item of saddlery could enable animals to be exercised off the lead at night in safety.

Some known forms of dog collar carry a  
 30 succession of faceted light-reflecting plastic studs on their outward-facing surface. These however are almost entirely decorative and not functional. They do not emit light, they will only reflect light under certain circumstances and at night they are  
 35 virtually useless as a means of safe identification.

According to the invention in its broadest aspect, an electrically-illuminated harness has a succession of light-emitting diodes built into its outward-facing surface, and incorporates a pouch  
 40 to house the diodes' power source; and the necessary electrical leads from the power source to the diodes are housed within the harness and can flex, in use, with the harness.

Because the diodes consume negligible power,  
 45 only a very low-powered and light-weight battery is needed to power them. The electrical leads can be similarly light-weight, and easily flexible. The diodes themselves weigh hardly anything. For all these reasons, a harness embodying the invention  
 50 need be virtually no more heavy or bulky than a conventional harness of similar size.

Optionally the diodes are built into the harness surface in a waterproof manner. For example, the heads of the diodes may protrude from the surface  
 55 whilst being held into the surface by a waterproof glue such as ARALDITE (ARALDITE is a trade mark). The harness can then safely be used in wet weather, as the non-outward facing surface need not necessarily get wet.

60 Optionally also the leads are housed in a waterproof manner, or are at least waterproofed in themselves. This minimises the risk of electrical failure in wet weather. It also enables the harness to be worn full-time, even when the harness

65 wearer (for example a dog wearing a dog collar) enters the water, if the battery-containing pouch is also suitably waterproofed.

In practical embodiments of the invention, there will be a switch between the diodes and their power source. The switch can be built on to the outward-facing surface of the harness, for ease of accessibility. It could for instance be mounted adjacent one end of a dog collar so that, when the collar was fastened, the switch was held  
 75 adjacent the buckle and would hang, with the buckle, below the dog's jowl. It would then be normally hidden by the jowl and would not detract from the overall appearance of the collar in use.

Alternatively, however, the switch could be  
 80 housed within the harness, with provision for it to be pressed or pushed alternatively on and off by pressing or pushing against an appropriate part of the harness. This would give a neater appearance to the harness irrespective of whether or not it  
 85 was being worn.

Whatever form of switch is used, the switch could be adapted to be operated by a remote control not electrically physically linked to the harness. Modern radio control gear exists, and the  
 90 invention in this particular aspect consists in the realisation of the ease and advantages of such remote control rather than in any specific selection of remote control technology. A dog off the lead at night, for example, could have his electrically-  
 95 illuminated collar switched on by his master without the dog first having to be brought to heel in order to physically actuate the switch.

The pouch in most instances may be made accessible, with the power source removable and replaceable. With modern forms of power source, however, and again given the very low power consumption of the diodes, the power could be permanently incorporated into the harness. For example, it could be housed within the two layers of a double-layer stitched harness and be intended to last the life of the harness. With such harnesses as dog collars or cat collars, which are relatively frequently replaced, this is an entirely feasible and advantageous concept.

100 110 The diodes may be mounted individually, but they could be mounted in clusters to give maximum illumination. A cluster of say eight diodes each emitting a light intensity of twenty-four m c d over a viewing angle of 35° is clearly visible at well over one hundred yards *in daylight* and is as bright as most cycle rear lamps, yet the circuit to be specifically described and illustrated herein takes only twenty milli-amps power.

Because of this low power consumption, and 120 considering again the case where the harness is expected to have a relatively short life, the switch could be a "one-shot" switch which, once on, remained on. For example the switch contacts could be housed within a double-layer collar with  
 125 an initial gap separating them so as to hold open the circuit from the diodes to their power source. The harness would be stored in that state until sold or otherwise for use. In use, the switch contacts could be pressed together and could be

- held together by for instance a pressure-bond adhesive initially coated over part of each switch contact, or by each switch contact being partly covered with one half of a touch-and-close fastener such as that sold under the trade mark VELCRO and which holds the contacts together when the harness halves are pressed together at the appropriate spot.
- Two electrically illuminated harnesses each embodying the invention are shown, by way of example only, in the accompanying drawing. Each will now be described with reference to the drawing, in which:
- Figure 1 shows the first harness in perspective;
- Figure 2 shows the electrical circuit housed within the harness; and
- Figure 3, also in perspective but to a smaller scale than Figure 1, shows the second harness.
- The first harness illustrated is a dog collar, the second a full harness including a collar. The collar in each case consists of two leather strips 11, 12 stitched together to constitute an otherwise conventional elongate band carrying a buckle 13 at one end and ending in a tongue 14 at the other end. The leather is suitably treated to make it waterproof, and waterproof thread is used to stitch the leather bands together.
- A succession of light-emitting diodes 15 is built into the outward facing surface 11 of the collar. Each diode is spaced from its neighbour by the same amount. The heads of the diodes protrude from the surface 11, but the diodes are glued into holes previously cut into the surface 11, and are held in those holes by ARALDITE waterproof glue.
- The diodes themselves are readily available and the skilled reader will have no difficulty in selecting appropriate forms of them. They could emit a red or a yellow light or they could flash red intermittently.
- A pouch 16 is sewn into the collar adjacent the base of the tongue 14. The pouch contains a small PP9 battery (not shown) and in this particular instance the pouch is permanently closed and waterproofed. The necessary electrical leads from the battery to the diodes 15 are housed between the two leather bands 11, 12 and are trapped between those bands when the bands are stitched together.
- A miniature on/off switch 17 is glued to the collar adjacent the battery-holding pouch 16. The switch completes an electrical circuit shown diagrammatically in Figure 2. In use, as has previously been outlined, the diodes illuminate the collar when the switch 17 is pressed on, and provide an effect which is both attractive and safety-enhancing.
- The invention is not restricted to the specific forms illustrated. For example, the voltage and

- power consumption of the circuit is so low that there is no real need to take excessive waterproofing precautions. Also, as the base of each diode is flanged, the diodes could be made a press-fit in holes drilled in the outer band 11 of the collar and would then adequately be held in place by the inner band 12.
- The light emitting diodes are virtually indestructible and have an almost indefinite life. These factors enhance the advantages given by the invention.
- ## 70 CLAIMS
1. An electrically-illuminated harness characterised in that it has a succession of light-emitting diodes built into its outward-facing surface, and incorporates a pouch to house the diodes' power source; and the necessary electrical leads from the power source to the diodes are housed within the harness and can flex, in use, with the harness.
  2. A harness according to Claim 1 and in which the diodes are built into the harness surface in a waterproof manner.
  3. A harness according to Claim 1 or Claim 2 and in which the leads and/or the power source are housed in a waterproof manner, or are at least waterproofed in themselves.
  4. A harness according to any of the preceding Claims, in which the necessary switch between the diodes and their power source is built on to the outward-facing surface of the harness and is mounted adjacent one end of a collar portion of the harness so that, when the collar is fastened, the switch is held adjacent the collar buckle.
  5. A harness according to any of Claims 1 to 3 and in which the switch is housed within the harness, with provision for it to be pressed or pushed alternatively on and off by pressing or pushing against an appropriate part of the harness.
  6. A harness according to any of the preceding Claims and in which the switch is adapted to be operated by a remote control not electrically physically linked to the harness.
  7. A harness according to any of the preceding Claims and in which the power source is housed within the two layers of a double-layer harness.
  8. A harness according to any of the preceding Claims and in which the diodes are mounted in clusters.
  9. A harness substantially as described herein with reference to and as illustrated in Figures 1 and 2 of the accompanying drawings.
  10. A harness substantially as described herein with reference to and as illustrated in Figures 2 and 3 of the accompanying drawings.